Volume Lab Name_____

Date_____ Page _____

Lab 1-Volume of Liquids

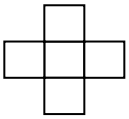
Part A: Record the volume of the liquid in each of the graduated cylinders A, B, & C. Be careful not to change the volume. Then, list the smallest and largest amount of volume that each cylinder CAN measure.

Cylinder	Liquid Volume	Smallest Possible Measurement	Largest Possible Measurement	Increments of each cylinder (precision)
A				
B				
C				

Part B: Use one empty graduated cylinder and place 32 mL of blue water from a beaker. Have the others at your station check confirm you have placed 32 mL in the cylinder. Replace the water back into the beaker and rinse the cylinder. Clean up any spilled water. Allow another student to do this procedure and confirm their volume.

Did everyone at the lab agree with your volume of 32 mL? _____

Lab 2-Part A



1. Take a piece of 1 cm graph paper and cut it into a plus sign shape.
2. Form a PERFECT cube by folding the paper on the lines.
3. Use tape to connect the sides together to form a leak proof cube with straight sides (open on top).
4. Draw the cube as a three-dimensional figure in the box. (Draw a square, then another square below and to the right of the first one, connect the left, top corner of square one to same place on square 2, and continue.

Part B

1. Using a metric ruler, measure the length, width, and height of your cube in cm. All sides should be 1 cm.
2. Calculate the volume of the cube (V=l x w x h). Units should be cm^3. Show work below:

_____ x _____ x _____ = _____

length width height Volume

3. Save your cube for Lab 3.

Lab 3 Part A

1. Put 9 mL of water in a 10 mL graduated cylinder.
2. Use an eyedropper/pipette to count the number of drops to add 1mL of water (to 10 mL).
3. Repeat #2 two more times and get an average number of drops.

_____ + _____ + _____ = _____ divided by 3 = _____ (Average number of drops)

Part B

1. Take 1 mL of water and pour into the paper cube from Lab 2.
2. How well the 1 mL fit into the cube? Perfect Underfilled Overfilled

(1 mL of water should fill a "1 $cm^{3"}$ exactly because 1mL = 1 cm^3 = 1cc)

3. Clean up lab and discard wet cube in the trash..

4. What does "cc" stand for? _____

Lab 4-Volume of Regularly Shaped Objects

Part A: measure the length, width, height in cm of the objects on the lab table.

Part B: Calculate the volume in $cm^{3.}$

Object	Length (cm)	Width (cm)	Height (cm)	Volume ($cm^{3)}$

Volume of Soda Can-use this formula: (____)^2 x _____ x _____ = _____
radius^2 pi (3.14) height Volume (cm^3)

What is the volume **printed** on the soda can?_____

Calculate Percentage Error for Soda volume (SW):

Lab 5-Volume of Irregularly Shaped Objects

1. Add enough water to 1000 mL beaker to submerge your hand without the water going over 1000 mL. Record this volume of water as Volume 1.
2. Form a fist and place your hand into the beaker to the first wrinkle on your wrist. Record as Volume 2.
3. Subtract Volume 1 from Volume 2. This is the volume of your hand using the DISPLACEMENT METHOD. Empty the beaker and wipe any spilled water.

Volume 1 (mL)	Volume 2 (mL)	Volume of Your Hand (mL)

Why is this method not very precise?

Develop a method to improve accuracy & precision when measuring your hand volume using a ruler or GC. Test your method-show work.

Lab 6-Irregular Objects Using Displacement

Part A: One at a time, remove the irregular objects from the cylinders. Place a specific amount of water in each cylinder and record as Volume 1.
Part B: Tilt the cylinder and GENTLY allow the object to slide down the cylinder into the water without splashing. Measure the volume and record as Volume 2. Make sure object is submerged.
Part C: Subtract Volume 1 from Volume 2 to determine the volume of each object. Empty the cylinders when finished and GENTLY put each item back into the cylinders.

Object	Volume 2 (mL)	Volume 1 (mL)	Volume of Object (mL)

Bonus: Try this at home. Measure your body using displacement in the bath tub.